Z79Forth

a Journey into Neo Retrocomputing

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- **Who:** Hobbyist. A one man job.

- **What:** A platform (SBC schematics and software) for learning Forth and further hardware development. Z is for Zilog, 79 for the primary standard allegiance. Hitachi 6309 CPU based. A design, not a product. GPL and public domain.

- **When:** July 1984, past two years.

- **Why:** Motorola 6809 appeal, nostalgia for more simple days.

- **Where:** France, input from all over the world.

Wire Wrapped Prototype Development

Hardware:

- Component selection and acquisition: Hitachi HD63C09E (CPU), Atmel AT28C64B (EEPROM), Hitachi HD63B50 (ACIA), Nec D43256 (RAM).

- Modular incremental development: clock circuitry, address decoding, EEPROM, ACIA, RAM, CompactFlash, EIA232.

- Evolving design: external power supply, USB slave device, mass storage, EIA232 alternative to USB. Clock frequency considerations.

Software (1/2):

- Initial diagnostics (blinking I/O LED), basic serial communication code, RAM check, system initialization.

- Documentation of the Z80 Forth implementation.

- Initial Forth porting job. ROM resident aspects. Case sensitivity.

- 79-STANDARD compliance and documentation requirements.

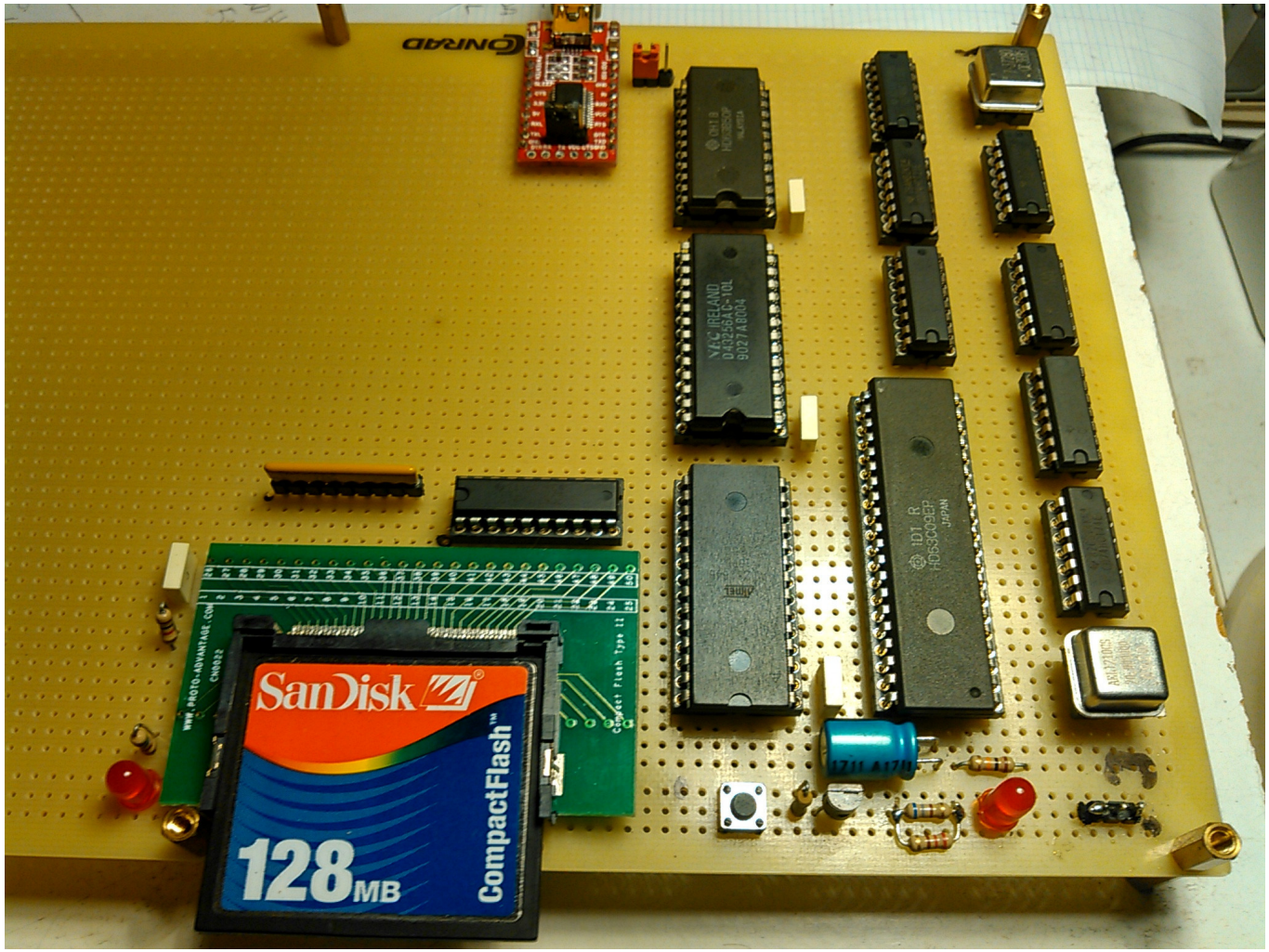
Software (2/2):

- New functionality: pictured numbers, DOES>, FORTH-83 and ANSI extensions (including GNU Forth and SwiftForth), *device words*.

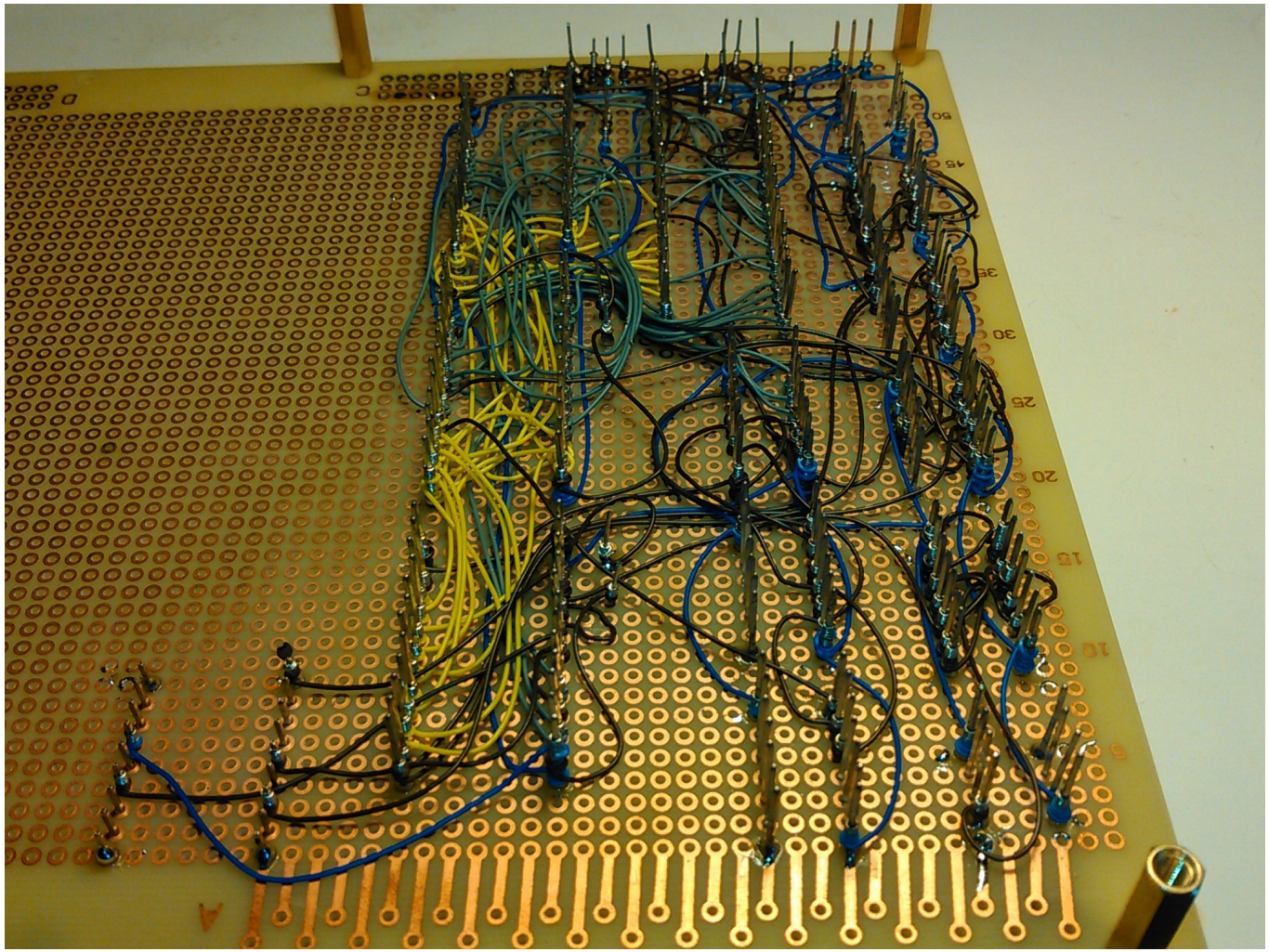
- Performance campaign: benchmarks and VCFe 2020.

- Application level software: examples and utilities.

- Selectable features: debug, case sensitivity, symbolic stack dump, code integrity verification (aka reliability) and EIA232 support.



Top View



Bottom View

Forth Implementation Specifics:

- A native implementation (no VM). Uses only 6 6809 instructions. A disassembler is provided to make sense of the generated code.
- The return stack does not hold return addresses. The U 6809 register is used a the data stack pointer.
- Private implementation parts (EX) are not exposed to the user.
- No user variables (no multitasking). No parameter field. No vocabularies.
- A 79-STANDARD sub-set. Only 3 bytes left in the EEPROM!